

REMARKS

The Applicants and the undersigned thank Examiner Wong for her careful review of this application. Upon entry of this amendment, Claims 1-16 remain pending in this application. The independent claims are Claims 1 and 13.

Consideration of the present application is respectfully requested in light of the above claim amendments to the application, the telephonic interview, and in view of the following remarks.

Claim Rejections – 35 U.S.C. §101

The Examiner rejected Claims 1-16 under 35 U.S.C. §101 by stating the utility of the claimed invention was not established. Particularly, with reference to Applicant's use of the term $N \log N$ matrix, the Examiner states that the specification has failed to disclose how to build a matrix with a size of $N \log N$. The Applicants respectfully traverse these rejections.

The Applicants have amended the claims in light of the Examiner's helpful comments. Applicants have amended the claims to add clarity. Applicants' claims refer not to a matrix of size $N \log N$, but rather to a matrix operation/solution as defined in the Specification at page 5, lines 15 through 21. Specifically, an $N \log N$ matrix inversion solution is employed, with respect to the processing of a signal through a Toeplitz matrix, by taking an inverse of every element in a row of the Toeplitz matrix, and by multiplying this inverse by the sending signal to generate a matrix with elements calculated by the averaging technique of the present invention. The resulting $O(N(2))$ complexity of Applicants' inventive solution can be contrasted with the $O(N(3))$ complexity of conventional minimum mean-square error (MMSE) typically used in the art. With these clarifications, Applicants submit that the Examiner's rejections have been overcome. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. §101 are respectfully requested.

Claim Rejections – 35 U.S.C. §112, first paragraph

The Examiner rejected Claims 1-16 under 35 U.S.C. §112 first paragraph by stating the utility of the claimed invention was not established and one skilled in the art would not know how to use the claimed invention. The Applicants respectfully traverse these rejections.

In light of the Examiner's helpful comments and with the corresponding clarifications and arguments referenced above in the arguments against the rejections under 35 U.S.C. §101, Applicants submit that the Examiner's rejections under 35 U.S.C. §112, first paragraph have also been overcome. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. §112, first paragraph are respectfully requested.

Claim Rejections – 35 U.S.C. §102 (b)

The Examiner rejected claims 1, 3, and 10-12 under 35 U.S.C. §102(b) as being anticipated by European Patent No. 0967763, issued in the name of Leus et al. (hereinafter, the "Leus reference"). The Applicants respectfully offer remarks to traverse these pending rejections.

Applicants' independent Claim 1 recites the significant element of an $N \log N$ matrix inversion solution for use with a communication receiver. The Leus reference does not teach this concept in Equation 2 or anywhere else in the reference. Since the Leus reference lacks a significant limitation claimed by Applicants, the Examiner's rejections have been overcome. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. §102 are respectfully requested.

Claim Rejections – 35 U.S.C. §103

Claims 4, 6-9, 13, 14, and 16 were rejected under 35 U.S.C. §103(a) as being unpatentable over the Leus reference in view of one or more printed publications entitled, "Per Tone Equalization for DMT-Based Systems" published in the name of Van Acker et al., (hereinafter, the "Van Acker reference") and U.S. Patent No. 7,106,789, issued in the name of Rezvani (hereinafter, the "Rezvani reference"), and U.S. Patent No. 6,735,255, issued in the name of Smart et al. (hereinafter, the "Smart reference"). The Applicants respectfully offer remarks to traverse these pending rejections.

Applicants claim the use of an $N \log N$ matrix inversion solution with a communication receiver. In contrast, the Van Acker reference uses an algorithm based on conventional MMSE techniques (see abstract), and the Leus reference proposes a solution that incorporates an RLS-based algorithm. Since none of the references, whether taken singly or in combination, teach or suggest the use of an $N \log N$ matrix inversion solution as claimed, the Examiner's rejections

have been overcome. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. §103 are respectfully requested.

CONCLUSION

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance.

If the Examiner believes that there are any issues that can be resolved by a telephone conference, or that there are any formalities that can be corrected by an Examiner's amendment, please contact the undersigned in the Atlanta Metropolitan area (404) 572-2884.

Respectfully submitted,

/SPW/

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October 23, 2007

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